

WHAT IS CLAIMED IS:

1. A method of forming a buffer dielectric film in a semiconductor device, comprising the steps of:

forming a silicon nitride film on a substrate;

5 forming a porous silica film on said silicon nitride film; and

forming a silicon oxide film on said porous silica film.

2. The method according to claim 1, wherein said substrate is a glass substrate, a silicon wafer substrate, a plastic substrate, or a plastic 10 substrate having an inorganic substrate attached to the lower surface thereof.

3. The method according to claim 1, wherein said step of forming said porous silica film includes the steps of:

mixing starting material containing silica with a solution and 15 condensing the mixed material;

applying the condensed material on said silicon nitride using spin coating method after a predetermined condensing reaction is progressed; and

performing thermal decomposition through a baking process.

20 4. The method according to claim 3, wherein tetraethoxy orthosilicate (TEOS) or tetramethoxy orthosilicate (TMOS) is used as said starting material, and ethanol is used as said solution.

5. The method according to claim 3, wherein hydrochloric acid

of acidic or ammonia water of basic is mixed as catalyst or surfactant having both hydrophobic group and hydrophilic group is mixed.

6. A method of manufacturing a thin film transistor in a
5 semiconductor device, comprising the steps of:

forming a buffer dielectric film containing porous silica material on a substrate;

forming an amorphous silicon layer on said buffer dielectric film;

irradiating a laser beam to transform said amorphous silicon layer into
10 a polysilicon active layer;

forming a gate dielectric film on the entire surface of the substrate including said polysilicon active layer and then forming a gate electrode with a predetermined pattern;

15 forming an interlayer dielectric layer on the entire surface of the substrate and then forming a contact hole such that said polysilicon active layer around said gate electrode is exposed; and

forming a source electrode and a drain electrode on said polysilicon active layer.

20 7. The method according to claim 6, wherein said polysilicon active layer is formed by an ELA method or a SLS method.

8. The method according to claim 6, wherein the method of forming a buffer dielectric film in a semiconductor device, comprising the

steps of:

- forming a silicon nitride film on a substrate;
- forming a porous silica film on said silicon nitride film; and
- forming a silicon oxide film on said porous silica film.

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9. The method according to claim 8, wherein said substrate is a glass substrate, a silicon wafer substrate, a plastic substrate, or a plastic substrate having an inorganic substrate attached to the lower surface thereof.

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10. The method according to claim 8, wherein said step of forming said porous silica film includes the steps of:

mixing starting material containing silica with a solution and condensing the mixed material;

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applying the condensed material on said silicon nitride using spin coating method after a predetermined condensing reaction is progressed; and performing thermal decomposition through a baking process.

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11. The method according to claim 10, wherein tetraethoxy orthosilicate (TEOS) or tetramethoxy orthosilicate (TMOS) is used as said starting material, and ethanol is used as said solution.

12. The method according to claim 10, wherein hydrochloric acid of acidic or ammonia water of basic is mixed as catalyst or surfactant having both hydrophobic group and hydrophilic group is mixed.